The village is one of a series of settlements in a long narrow valley, on a limestone plain, bordered on the east by a steep ridge, up to 300 feet in elevation and running in a northwest and southeast direction, which divides the valley from the sea. On these cliff like formations, large outcrops are covered with shrubs and miscanthus grass. Lanes and roads lead from the valley floor to the summits of these hills, where villagers collect their firewood and grass for roof thatch. On the rocky, steep slopes of this seaward ridge, above the line of cultivation, is the tomb area. Precipitous and stony hills prevent cultivation, but occasionally a sharp tongue of land reaches far up the slope, its end protected from the rains and wash by a short stone fence.

Between Oushichan and Hanashiro village, there is a bridge over a small stream, its upstream course obscured by its dispersion in the rice fields. The dirt road, gradually ascending, cuts through the main rice growing area of the village, on a gentle slope, reflected in the bench cultivation of the rice fields. Here and there are large rocks and stony outcrops, with an occasional scrub pine, cycad, or a covering of miscanthus. Cultivation goes around these large stones.

The road, about one-fourth of a mile from the bridge, soon leads into what looks like, from a distance, a densely wooded area. This is the settlement.

With the exception of the rough stony land of the limestone mountains and steep slopes, the soils of the area are the Okinawa clay loams and the Chinen stony clays lying on the limestone plains. The farm and village area takes up approximately 427 acres, of which 257 are in gently sloping Okinawa clay loams, a deep, well drained, neutral to slightly acid and very fertile soil. Another five acres is of the same type but these are in slopes, of a gradient ranging from 8-15%. There are 80 acres in gently sloping Shuri clays, shallow, moderately fertile, an olive colored, crumbly, calcareous clay; another 35 acres in the Awase clays, deep fertile, crumbly, calcareous clay of olive-gray color, and 14 acres of rough stony land.

The hillsides and the summits are free of densely growing trees and shrubs, and the lowlands are given over to cultivation. There are no groves of trees to protect the crops from typhoons. The trees and the protection they give are confined to the village. This is typical of many villages of southern Okinawa, where the hills and mountains have few trees, and dense growths are associated with habitation.

Inside the village, winding lanes branch off the main dirt road. The older houses are on the north side of the road. On the opposite side, the houses, newer or rebuilt since the war, adjoin the cultivated area. In the older section, the dense shrubbery, the tree lined lanes, broken occasionally by stone fences, wind through the village with footpaths branching off, sometimes past an open field, a reminder of a failure to rebuild after the war. On the northern outskirts is the village office, its gong in the yard, the open field, a playground for the children.

133 Hanashiro and Oushichan villages to a broad semi-circular valley, the
361 Oushichan plain, with a gentle gradient sloping to the sea. Shortly before the coast is reached there is a sharper drop, and it is in this depression along the shore and the coastal strip that the fishing village lies.

134 The Okinawan clay loams and the Chinen stony clays are also the
133 predominating soils of the area. There are about 85 acres of the gently sloping clay loams, 155 acres of the gently sloping Chinen stony clays. While moderately fertile and well drained, these soils are also shallow and stony, with obvious defects for the pursuit of agriculture. There are 10 acres of deep, fertile poorly drained, slightly acid alluvial soils. These occur along the river and its estuary and in a small former river mouth to the south. There are about six acres in rough stony land.

731 The village has very little storm protection. There are no shelter
133 belts around it, nor are there many trees within. It is open to storms
417 and typhoons, and the water, lashed by the sea, is sufficient to break and scatter the large stones of the seawall. At present, inside the village there is none of the privacy typical of the agricultural villages
361 and their compounds. There are few trees, shrubs, or fences. In the
351 older part of the village, the houses are closely set together. Fishing
220 nets hang on the lines of the yard. In season, the yard is covered with drying fish, fish fins, and fish backs. The yards and the shore are dotted with men cleaning or repairing their boats.

362 The lack of natural beauty of the place is accentuated by the poor-
512 ness of the houses and the other buildings. Its atmosphere is unmistakably
484 different. The village is more commercial and more lively than the quiet and concealed agricultural village. Life is not so much of a routine, for much depends on the weather and the sea. The village has people who have travelled widely. Some of its fishermen have been in the waters of Java, of the South Seas, of the Andaman Islands, the Philippines, and Indo-China.

438 The village's main commercial contacts are with the remaining
[311] agricultural villages of the township from which it must obtain much of its food, for the area is not suited to agriculture, nor is much land available. For wider contacts, there are Itoman about 4 1/2 miles, and
494 Naha about 8 1/2 miles away. Buses go through the village twice a day.
368 The three wheeled cycles are irregular but come and go more often. Fish
574 is sold at Naha. The theatre for the travelling troupe of actors from Naha and for movies is in Horikawa across the river. Many visits are also made to Itoman to see relatives and friends.

727 The war was even more catastrophic for Minatogawa than for Hanashiro.
[361] Before the war, Minatogawa was a thriving, prosperous and well built up small town. About 70% of its buildings had a tile roof and 30% had thatch roofs. There were about 30 stores, sake shops and drinking places, including a geisha house, along the road, serving the fishermen and the stonecutters. Of the 430 buildings in the area, only three were left

1: Glacken E-5 (1951-1952) 1953 AC7 Okinawa AC7

1

Historical Notes on Housing

In all villages, much time is spent, in addition to agricultural or fishing tasks, in housebuilding, either for one's self or for friends and neighbors. Housebuilding is the most time consuming of a man's tasks after his primary occupation. Repairs to or reconstruction of the poorer houses are continuous. The man with a good house and a tile roof has little to worry about. But he will often be found helping someone less fortunate.

The traditional houses of Naha and Shuri showed both Chinese and Japanese influences. The traditional house and compound of the rural village has been compared with the ancient Japanese house, and it bears some similarities with houses found among the Ainu.

It would seem from the observations and researches of earlier students that the house was always built above the ground without excavation, and sometimes on stilts. The supporting posts making up the rectangular house were either placed in holes or on stones on the ground. The supporting posts, the ridge poles, the cross beams were branches or trunks of trees trimmed and cut for length. Roofs of thatch had the apex of the roof covered by a saddle or arch shaped thatch made, like the rest of the roof, of grass. Smoke escaped either through an aperture in the ceiling or through a window, as it still does in many of the poorer houses. The houses were filled with smoke. The oldest rural houses apparently had only a dirt floor with scattered mats, though some had a raised floor.

The food storage sheds or small granaries were raised on stilts. Engravings of these have appeared both in Perry's writings and in Bayard Taylor's works. There is some question whether this granary (now disappeared) was indigenous or a borrowing. The purpose of the raised granary was probably to protect against dampness and to prevent infestation by rats and vermin. These granaries were open sided with no boarded up walls, and, in Okinawa, were circular.[1]

Animal pens or stalls were not attached to the house, but were always separate. In the courtyard, earthen rain water vessels were inbedded half way into the ground to catch the rain water. There were stalls for goats and pig pens, and the pig pens were used also as a toilet. This is no longer practiced to my knowledge, although the outhouse with its holes in the ground is found under the same roof as the pig pen. The entrance to the courtyard was opposite the front of the house. The protective stationary gate, the hinpun (in Okinawan), made of reeds or stones, stood at the entrance inside the court, as it does now, to shield the people of

1 For drawings of the granaries, see Satow, E. M. Notes on Loochoo. Transactions of the Asiatic Society of Japan, 1 (1882), 1-8. The drawings follow the text. See also Simon, Beitrage zur Kenntnis der Riukiu-Inseln, as cited, 75-85.

417 the house from the glances of the curious. It has been suggested that the stationary gate at the entrance of the courtyard is of Chinese origin, that its purpose originally was to scare away spirits, and that its former presence in the tomb compound indicates that it was introduced along with the turtleback or horseshoe tomb from Fukien province in China.[2]

175 351 349 Captain Hall described Okinawan house exteriors and the surrounding buildings, including those of the common people. The house was "buried in foliage" and hidden from view. It was surrounded by a light fence of rods, about one foot apart with creepers on top. These rods were probably stalks of miscanthus grass, or of the dwarf bamboo. The site had a wicker gate, possibly meaning the hinpun made out of the dried grass stalks. One house which he described was divided into two compartments, eight feet square, with a small veranda at one end. The floors, made of bamboo, and about six feet above the ground, were covered with a straw mat. The walls, about five feet high, were wattled with split bamboo, and the house had a pointed thatched roof.

352 354 In the interior, there were shelves for bowls and cups, and in a loft or garret tools, nets, or baskets were stored. These installations now are often found in the kitchen. In the middle of one side of the house there was a fireplace, sunk below the level of the ground.

343 175 342 Outside, in the compound, a pigeon house, poultry yard and spinning wheels were observed. In another passage, Hall describes a cottage of "wattled rattans" with a light open bamboo roof with thatch and creepers, one wing of which was occupied by goats. The compound consisted of a stable, a pig sty, and a poultry house. There was also a mill. The granary was on posts about six feet above the ground with firewood piled below. There was an anvil with a forge of masonry but no bellows.[3] 325

The houses of the poor, said Fahs in his report to Commodore Perry, were made of bamboo and had no floors.[4] Accounts around the turn of the century say that houses and granaries were supported by corner posts of considerable height. Schwartz said these posts were about five feet high. The house walls of straw thatch were held in place by bamboo grass matting with a space two feet in width acting both as a door and a window, a matting curtain covering the aperture.[5]

[Text Continues TOP of p. 73--Analyst]

2 Simon, as cited, 80. C. W. Bishop has suggested that the stone houses of the Ainus of Hokkaido point to contact with southern insular peoples. Also, the primitive Japanese hut which was illustrated resembled the one we have been describing for Okinawa. It had a thatched roof and a courtyard which was cut off from the outside view by the hinpun. The historical geography of early Japan. Geo. Review, 13 (1923), 40-63. Note especially Figures 5 and 6. (This article was reprinted in Annual Report of the Smithsonian Institution, 1925).

3 Captain Basil Hall, Voyage to Corea and the Great Loo Choo, as cited, 124, 141, 142-43.

4 Hawks, Perry's expedition to Japan, as cited, Vol. II, 50.

5 Henry B. Schwartz, In Togo's country. New York and Cincinnati, 1908, 148-49.

592
342 magazines and pasted on the wall, and here he entertains visitors who come for conversation or study.

3

Types of Houses

342 In all the villages studied, the houses may be divided into three general categories: (1) the Japanese style house with the thatch or tile roof, (2) the smaller stone house with the Japanese type floor plan, and (3) various shacks resembling in some details the simple structure of the old Okinawan rural house.

[313] [439] The sturdy Japanese type house is made of excellent hardwoods imported from Japan or brought from the forests of northern Okinawa. This house was often constructed without nails. It was put together [335] by mortise and tenon joints, and also with a piece of wood, square on the edge and about three inches long which functions like a dowel. This is known as a kusabi. In modern houses, both of the simple and more complex types, nails are more commonly used.

[355] The eaves of this house are supported by strong poles, unfinished, usually from the Japanese redwood (sugi in Japanese, Cryptomeria Japonica, D. Don) or the ihumaki (Podocarpus macrophyllus D. Don). The [411] poles are placed on flat triangular stones for foundation support. The houses have plank floors. Both the tile and the thatch roof types (to be [352] described later) have the same floor plan with the size of the rooms determined by the number of mats (tatami in Japanese) desired.

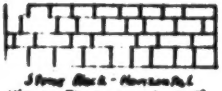
The half tile, half thatch roof is not uncommon, an indication either of a roof partially destroyed by the war which has been repaired by thatch, or athatched roof gradually being replaced by tile. This is a slow process, as tile is costly. Basically, all of these houses have the same general plan, except for differences in roof materials.

[355] The older Japanese type houses with a tile roof and the newer ones being built on that model are provided with a drain pipe for rain water catchment. This pipe, running along the length and the width of the [415] roof channels the water into a large tank on the ground, reducing the [312] labor involved in carrying water from village ponds or central springs. Many of these rain water catchments disappeared when the old houses were destroyed in the war. Drain pipes cannot be attached to the thatch. In general, rain water is not now a plentiful source of supply in the villages, though buckets and tubs are frequently put out during a heavy downpour, and this water is used for drinking and cooking until it begins to spoil. It may supplement the water carried from a central village faucet, the well, or a pond.

The construction of the Japanese type house is complex. Basically, the design of the house is derived from the arrangement of three rooms,

TYPES OF HINPUN

417



Stone Block - Horizontal
11'3 9", Thickness about 9"

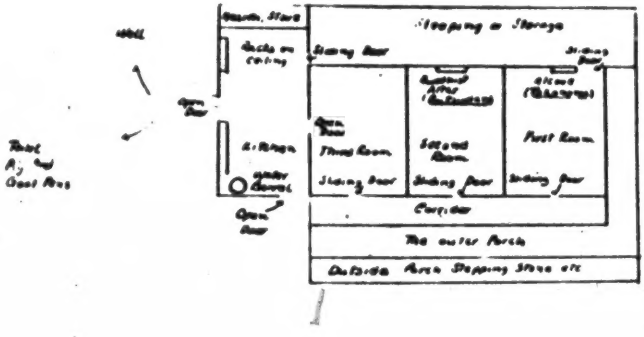
Stone Block - Vertical
about 6' Thickness about 6"

Tile Lava (Flame-proof)
Lattice 3 x 3'6"

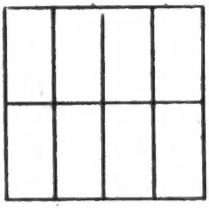
Bamboo, Wood, made of green Yambaru bamboo
Typical size 6'x6'

ARRANGEMENT OF THE ROOMS

342

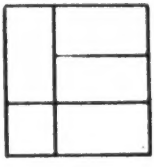


8 Mat Room



Size of mats
3' x 6'

4 1/2 Mat Room [352]



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413

(3) Chisels (nomi in Japanese) of various sizes.

(4) The hand saw (nokogiri in Japanese). There are two kinds: a single edge for cross cut, or a double edge, the second for rippling. The saw has a short blade and a long handle.

(5) A kind of hatchet (te-ono in Japanese).

(6) A rabbet plane (motoichi)

(7) The square (kanejaku)

(8) A gimlet, the large hand operated boring tool with a T shaped handle (ōkii ana in Japanese, bōtō in Okinawan).

(9) The common brace and bit.

(10) The hammer, both claw and ball pein.

(11) The sumi tsubo (in Japanese). This is a reel with a string. As the string is drawn out from the reel, it passes through an India ink paste which is in a shallow flat dish situated at the point where the string comes out. The inked string is made taut along the line to be cut, snapped sharply, resulting in a black line along the desired cutting edge.

(12) The sumisashi (in Japanese), a short stick, dipped in ink, which is used for drawing a cutting line by hand usually with a square or rule to join longer lines made by the inked string.

(13) A plane for use on curved surfaces (the maruka in Japanese.)

(14) A sandshaker. When mortar is needed, an improvised sand-shaker may be constructed. Long poles are set up wigwam fashion. One end of a wire is fastened to the apex of the poles, the other to the end of a wire net. The other end of the wire net is held in the hands. Sand is put on the mesh, and the device is then shaken so that the fine sand goes through. Long poles such as those used for the sandshaker or in building construction are called maruta (in Japanese). [417]

6

Co-operation in Housebuilding

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In Okinawa, co-operation among villagers in larger tasks is not conspicuous.[8] Housebuilding is an exception. Depending on the size, any number of people in a village may participate in building a house. If the house is small, only friends or immediate relatives are likely to assist. But if it is a large house, friends or neighbors may work one or two days, and relatives three or four days.

8 The nature of village co-operation will be discussed in Chap. 18

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place. Then, as now, paddy and dry crop land might lie together, depending upon local factors. In the periodic redistribution, each family received shares of each in non-contiguous fragmented parcels. In the nature of things, they received small shares of the excellent, moderate shares of the good, and large holdings in poor land.

The old classification of lands was simple and did not go beyond three general divisions of good, fair, and poor. Apparently the Japanese after 1879 introduced more refinements and increased the number of classifications to six. Land classification, then as now, was empirical. It was based on observation, local knowledge of present and past yields, and known dangers to the land. It was not based on scientific knowledge of the soils, nor is it today.

Several dangers to land and crops were considered: (1) the danger of the wild boar (inoshishi). These reddish brown wild boars have disappeared from large parts of Okinawa, though occasionally one is seen in the northern forest. The boars destroyed crops by night feeding. Remnants of old fences can still be seen in the area around Matsuda. In Oku, in the extreme north, fences are still used and many can be seen along the hillsides. (2) Dangers from floods and salt water spray. Local flooding is common and often confined to a narrow area. Salt water spray and salt water in the air, especially in typhoon times, are still menaces to crops. The danger from typhoons did not enter directly into the determination of land classification because the area of destruction was so wide that it was not a factor distinguishing one plot from another. (One can however observe areas of differential damage in a village as an aftermath of typhoons).

This old land allotment system is now forgotten except in a few isolated areas where its main features are still apparently preserved. The best known of these is Kudaka Island off the southeastern shore of Okinawa. If the system has disappeared, except for a few isolated survivals, its influence remains to the present: it determined the pattern of land use still in effect today, the pattern of small, discontinuous parcels, and set the precedents for the mechanics of land classification. The basic classifications such as rice land, dry crop land, community forest were Japanese and are of great age. The old land allotment system is also considered to be of great antiquity.[2]

2 It was a matter of considerable disappointment that I was unable to spend two or three weeks on Kudaka to study the land system there. Neither has time permitted an investigation (of great inherent interest) of the historical antecedants of the old Okinawan system. Land classification, such as we will be discussing in the next chapter, is very old in Japanese culture. The old Okinawan system bears some resemblances to the "mouth-share-land" (ku-bu-den) system of old Japan which appears in the Taihō code (702 A.D.). This was a system of distribution of communally owned land, but I have not been able to determine whether the distribution was periodic. See Wigmore, J. H. and Simmons, D. B. Notes on land tenure and local institutions in old Japan. Transactions of the Asiatic Society of Japan, 19 (1891),77 on land classification, (continued on next page)

In the areas studied, no serious sheet erosion was observed

No doubt this may be a problem in parts of Okinawa, but it is doubtful that this menace will threaten the habitability of the island. Occasionally one can see a freshly hoed field on a slope that is losing its soil during a downpour. But the fact that the hills and mountains are covered with vegetation, are not too steep, and that grasses and shrubs are cut off allowing the stubble with the roots to remain in the soil effectively binds the soil of the hills and at the same time prevents flash floods. With the exception of stony soils, the land of the areas studied had a plant cover. This statement is not inconsistent with the previous remarks regarding deforestation, as the disappearance of the pine, the cycad, and the pandanus has been offset by the spread of kaya (miscanthus) grass. Boundary paths also keep the soil in place. They often roughly follow the slope and are sufficiently crooked and winding and of sufficient depth to prevent washing away of large quantities of soil. While there is no complex irrigation system in these areas, the small ditches which carry the water down the slope are winding and covered on their borders by weeds. Occasionally one can see a farmer shovelling up the soil accumulated in a natural catchment in a bend of one of these ditches and restoring the lost soil to his land.

134 133 137 185 [487] [312]

In all areas, equally simple devices to protect the soil could be observed. Roadside borders of stone, like the stone of a rock garden, often line the fields adjoining main roads. (One could write a long essay on stones and the part they play in the culture of the people). These stones come from the fields. If fields do not have stone borders, weeds are left to grow. They are cropped, but the roots are left in the soil. In Hanashiro, stone fences on slopes and contour breaks are a common sight. Sometimes these have the appearance of blunt wedges, the end of the wedge going up the ravine. These stones have been painstakingly gathered from nearby areas.

185 417

Terracing is practiced in a crude form in these areas. It really is step or bench cultivation, the plots being above one another in step like order. The function of terracing is, in the case of the dry crop land, to bring more land under cultivation, protecting it from washing away; in the case of the rice fields, it supplies flat land for cultivation at different levels. In the areas studied, terracing did not go all the way up the mountain side, although this practice can be observed in parts of Okinawa.

185 241

Very frequently the ledges of the terraces are covered with a border of weeds or cropped grass which prevent soil runoff down the hill. In the Matsuda area, rice is grown up a narrow mountain valley, or ravine, with trees and shrubbery on the hillsides growing to the very edge of the cultivated plots. In rice terracing, the boundary paths often divide one step from another with openings in the ditches to allow the passage of water to the level below.

824 The most common of the Hanashiro trees are (1) the banyan or gajimaru, or yōzu. This tree is a common sight with its long
[731] roots growing around and through the stone fences. The tree with its roots bracing the stone fences is excellent typhoon protection for the village. (2) The usuku (Japanese scientific name, the akou) resembles the gajimaru in appearance and serves the same purpose. The fukugi (Darcinia spicata Hook) and an occasional cycad
[417] are common windbreaks. These trees are almost invariably in combination with stone fences, made of blocks, or with fences made of loose stones which have settled and been bound together by small plant roots. Village typhoon protection is a simple but effective combination of stone, shrubs, and trees. There is also an occasional kuroki
[534] (kurchi in Okinawan), from whose trunk the samisen, the stringed musical instrument, is made, and the palm (shuro).

There are wild plants in each of the areas but their importance has also declined. Among these is the pandanus (the adan, Japanese scientific name, the takonoki). This plant was plentiful before the war, but is now scarce except in the mountain area. It can occasionally be seen in genya land or in small clumps on an outcrop. The blades of the pandanus are long and hard, with a row of spines down both sides of the blade. It has had several uses. Formerly it was the common material for making slippers (zori), hats, cigarette cases, and hand-
[463] bags. These home industries have all but disappeared, but old people
[887] occasionally do a little. In preparing the pandanus blades for use, the thorns are removed and several strips are made. These are then boiled, dried, and smoothed out. Then they are woven into the desired pattern. A first class pandanus blade is about 5 feet long. In the
[782] celebration of O-Bon, the fruit of the pandanus may be offered as food to the ancestors.

Another plant occasionally used is the getto, known also in Okinawa as sannin or muchigasa. Its chief use is in the festival of the 8th day of the 12th lunar month. At this time, rice cakes (mochi) are wrapped up in its long and wide and flexible fibres. These wrappings, often made by children, are hung from the ceiling or from the wall. The stem of this plant was much used in the past for rope.

824 The nigana (njana in Okinawan, Ixeris dentata Nakai) is still
262 used in this area as a food and medicine. It has an exceedingly bitter
957 root, about 1/8 of an inch in diameter in a mature plant. The root is put in hot water, and the liquid drunk as a stomach medicine. The leaves, not so bitter as the root, have a sour, slightly bitter taste. They are often served with the white cuttlefish (shiroi-ikka).

The ōbako (known in Okinawan as the hirawakusa or hirawagusa, Plantago Asiatica L, "Japanese ribwort") is used as a medicine and as a food. When vegetables are scarce, it is eaten as a green. As a medicine, the leaf is heated over a fire and the hot leaf is then pressed over a swelling.

137 settled area and for protection of the surrounding crops. Around
311 houses, there are common stone fences, bamboo fences and trees.
Stone fences, though solid may be toppled over. Bamboo, or dwarf
● [419] bamboo fences, seemingly slight, resist the winds and remain intact
because of their flexible loose weave.

137 The trees on the ridges of the low lying hills or on high pieces
133 of ground are tall, and sturdy, and jealously protected. The villagers
185 take great pride in them. Today this pride is based on the realization
[098] of their effectiveness; in former times, their protection was associated
[777] with the worship of the gods of the sacred grove (utaki). There were
[193] beliefs, which now seem to be dying out, that cutting these trees
would bring bad luck. Many villagers say that Saion in the 18th
century intentionally invented superstitions concerned with the cutting
of the trees in order to save them. Now these trees are no longer in
danger of cutting, even though the penalties of the old beliefs are no
longer feared.

The following short list does not exhaust the kinds of trees and plants found in this area. It is confined to those trees, shrubs, and grasses which are most frequently found and which have the greatest local importance.

829 (1) The Ryukyuan pine (Riukiu-matsu in Japanese, Pinus luchuensis
313 Mayr). This tree is still one of the commonest sights of the island, even in southern Okinawa. At present, it is a source of firewood, cheap lumber, and siding. It is not considered good housebuilding material because of termites (shiroari). Pine was used for fishing boats within living memory, but now they are made of much harder woods. In this area, the coniferous groves are along the seashore. The larger stands are not cut. Scrub pine on individually owned wild land may be cut for firewood.

(2) The fukugi (Garcinia spicata Hook.). The fukugi is used around homes and on mountain ridges as a typhoon protection. It is fairly plentiful here and prized as a building material (kenchikuzai). The hard studs, beams and cross beams and the wide plank floors in the older and better houses are often made out of this wood.

(3) The iju (Schima luchuensis Nak.). This tree, common here, is used as a building material and is considered to be better than the Japanese redwood (sugi). It is not regarded as a good firewood.

(4) The inumaki (Podocarpus macrophyllum D. Don). This tree is not well known here, and there are no large specimens. But it is regarded as the best building material when available. Often the large, hard, rough hewn poles which are placed on stones and support the eaves of the older houses are made from this wood.

(5) The shii (Shiia cuspidata). The dense stands of this tree in the village owned forest restrict the size of the specimens, though

231 Before a piglet is bought, its feeding habits are carefully observed by the buyer to determine future growing potential. It is then kept in a [417] sty: pigsties are either in the yard near the house or in a cluster of stables on the north edge of the town. Twice a day women cook the food in large kettles and ladle the liquid food into a trough. Nowadays [262] pork is rarely consumed in the village except for special holidays, when several families may slaughter pigs and sell part of the meat to every- [438] body through the local store or preserve some of it by salting. Most [251] farmers, however, wait for the meat buyer from the southern part of [442] the island from whom they receive a good financial return.

Goats are raised for home consumption. They are never left to graze [417] but are quartered in a goat pen near the pigsty and fed on grass cut from uncultivated land. Seven families in the central village have [492] horses. Their main use is to carry firewood from the mountains. The small breed looks like a cross between a horse and pony and seems especially adapted to climb the steep trails. They are also used for plowing and for pulling two-wheeled carts. The owner of a horse [434] may more than double his income from forest work. Horses are fre- [427] quently rented out for half the day's income from wood carried by them.

Silkworm raising, an important source of income in Taira before the war, is only now being resumed by some Tairan families. The [474] larvae are supplied through island-wide silkworm raising associations, which repurchase the cocoons after they are spun. To raise silkworms, a substantial house is needed so that rats cannot enter and eat the worms. The temporary postwar structures with holes and cracks in the walls and roof are inadequate. Only a few recently built houses can be used. One family keeps growing worms on shelves in the front room. [137] Most of the mulberry trees were lost during and after the war. Plans have been made to plant new trees. Young girls feed the mulberry [462] leaves to the gluttonous worms who require constant attention. When the worms are ready to create their cocoons, they are taken off their diet, and the cocoons are cleaned and sorted out. Silkworms can be raised four times a year if there is an adequate supply of mulberry leaves. Their sale brings a good income, which can become a substitute [434] for cash earned in forest work.

FISHING

226 Fishing is a much less important source of livelihood than one would [554] expect in a coastal village and is a low-prestige occupation. Only two